

Technical information

KH-41 & KH-45
No. 298R

How to replace Pallet clamping units & Mating parts on Pallet

[NOTE]

The lower part of the pallet clamping unit is not locked; it can come off if you hold it by the flange part.



At shipment, Pallet clamping unit is bound by a string so as to hold the lower part.

Refer to the attached assembly drawing.

Procedure to replace Pallet clamping units

- 1) Change Keep Relay K57.6 to "1".

K57.6 is a keep relay to release a safety interlock of the B-axis. By this Keep relay change, the rotary table can rotate and move even while the pallet changing arms are raised.

- 2) In MDI mode, execute the program below to move the rotary table to the 2nd reference point.

G91 G30 B0 Z0 M62;

Technical information

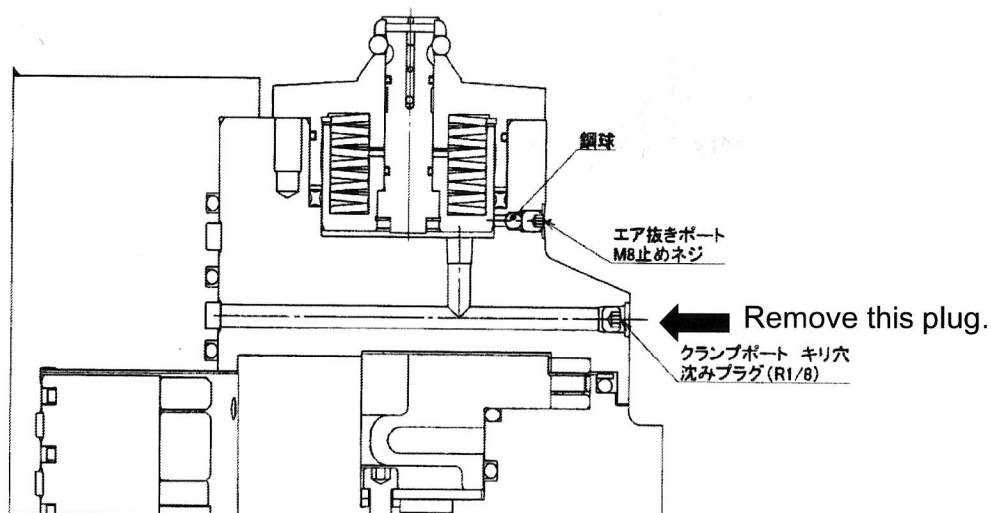
KH-41 & KH-45
No. 298R

- 3) Change to JOG mode. Set the Pallet Manual Selection switch at "UNCLAMP", and press the Pallet Start pushbutton.
- 4) Set the Pallet Manual Selection switch at "UP", and press the Pallet Start pushbutton. The pallet changing arms go up to raise the pallets.
- 5) Change to Handle Mode, and move the rotary table to the spindle side for easy work by the Manual Pulse Generator.
- 6) **IMPORTANT** - Change to JOG mode again. Set the Pallet Manual Selection Switch at "**CLAMP**", and press the Pallet Start pushbutton.
- 7) **IMPORTANT** - Press the Emergency Stop pushbutton. Be sure to exchange the clamping units in emergency stop status.

WARNING

In the emergency stop status, the pallet changing arms gradually move down. Do not put hands etc. under the pallet changing arms.

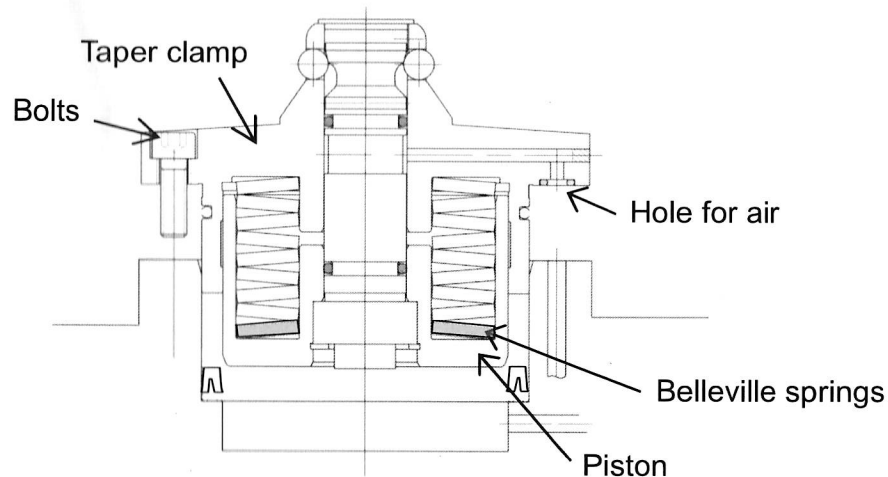
- 8) Remove the clamp port plug (R1/8) from the rotary base. (This will ease the removal of the pallet clamping unit in Step 9 below.)



Technical information

KH-41 & KH-45
No. 298R

- 9) To remove the current pallet clamping unit, loosen the 8 bolts gradually and one by one so that the clamping unit will not slant because there are Belleville springs (item #7 on the attached drawing) inside the clamping unit.

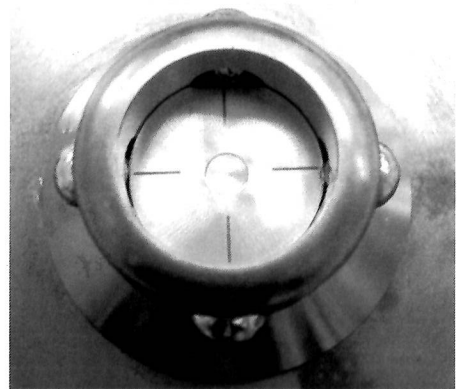


- 10) Apply Molybdenum grease to the new Belleville springs, and set them paying attention to the arrangement of Belleville springs as illustrated above. (The outside of the lowest Belleville spring should touch the inside bottom of Piston (#2)).

<<IMPORTANT>>

Do not attach Cap (#5) yet.


There is a cross mark on top of the lock bar (#3). By turning the bottom of the pallet clamping unit, make the notches meet the balls in the taper clamp.

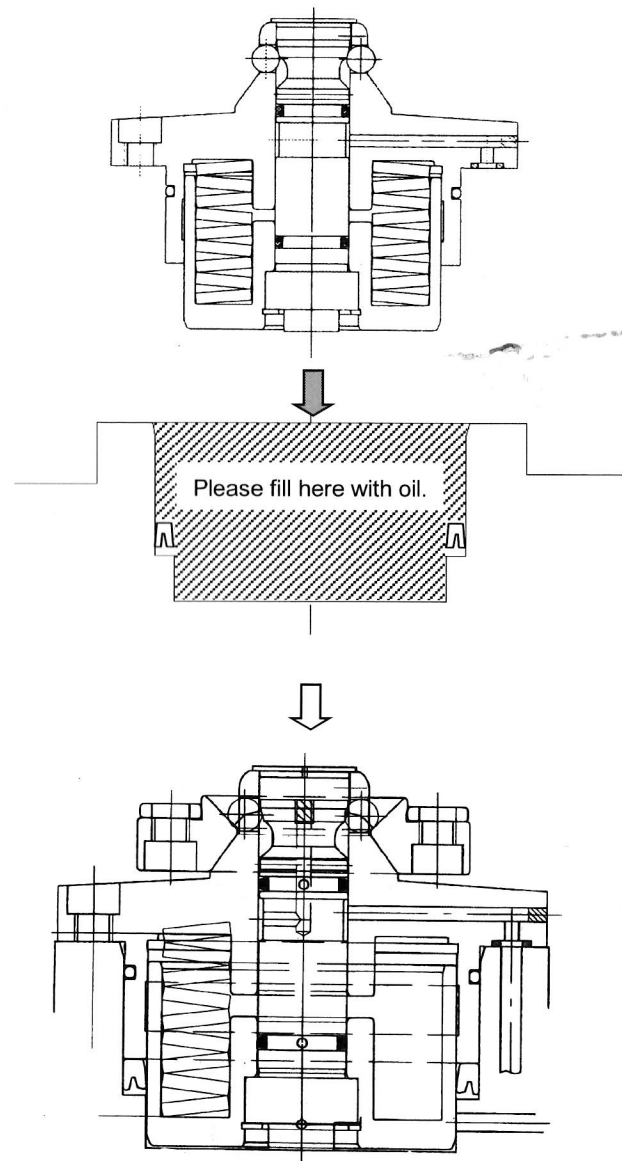


- 11) Taper Clamp (#1) has a hole for air. Set Taper Clamp so that its hole will meet a hole of the rotary table. (Make sure there is an O-ring (#12) on the hole.)

Technical information

KH-41 & KH-45
No. 298R

- 12) To prevent air from entering the clamping unit, fill the space marked with  with hydraulic unit oil. Fasten the 8 bolts (removed in Step 9) gradually and one by one.



- 13) Put the clamp port plug (R1/8) on the rotary base (refer to Step 8 above).
- 14) Release the Emergency Stop pushbutton and press the "NC READY" pushbutton until "EMG" message disappears.

ATTENTION

At the same time of air for pallet sitting confirmation, oil will splash from the top of the clamping units. Before releasing the Emergency Stop pushbutton, cover the clamping units with cloth etc. to prevent oil splash.

- 15) Execute pallet clamp / unclamp (without a pallet) several times by the Pallet Manual Selection switch / Pallet Start pushbutton, and check oil doesn't come from the top of the clamping units. Then, remove cloth which covers the clamping units (Refer to Step 14 above.)
- 16) Execute pallet clamp / unclamp (without a pallet) again, and check that the steel balls move smoothly. **If the balls cannot go in when unclamped, please check the notch on the lock bar (see Note of Step 10).**
- 17) In JOG Mode, set the Pallet Manual Selection switch at "UP", and press the Pallet Start pushbutton.
- 18) Set the Pallet Manual Selection switch at "UNCLAMP", and press the Pallet Start pushbutton.
- 19) In MDI mode, execute the program below to move the rotary table to the 2nd reference point.

G91 G30 B0 Z0 M62;
- 20) In JOG Mode, set the Pallet Manual Selection Switch at "DOWN", and press the Pallet Start pushbutton.

Technical information

KH-41 & KH-45
No. 298R

- 21) Set the Pallet Manual Selection Switch at "CLAMP", and press the Pallet Start pushbutton.
- 22) **IMPORTANT** - Be sure to change Keep Relay K57.6 back to "0".

Procedure to replace Mating parts on the pallet

- 1) Exchange 4 Taper blocks (#4). In case the original Spacers (#6) are not damaged, use the original spacers, not new ones.
- 2) In JOG Mode, set the Pallet Manual Selection Switch at "CLAMP", and press the Pallet Start pushbutton.
- 3) Rotate the B-axis, and check "Runout of the Pallet top surface" by a dial gauge. (Refer to the Inspection Record attached to the machine at shipment; No.8 "Run-out of swiveling pallet surface".)
- 4) If the runout is over 0.020mm [0.00078"], grind the Spacers (#6) so that the runout will be under 0.020mm.

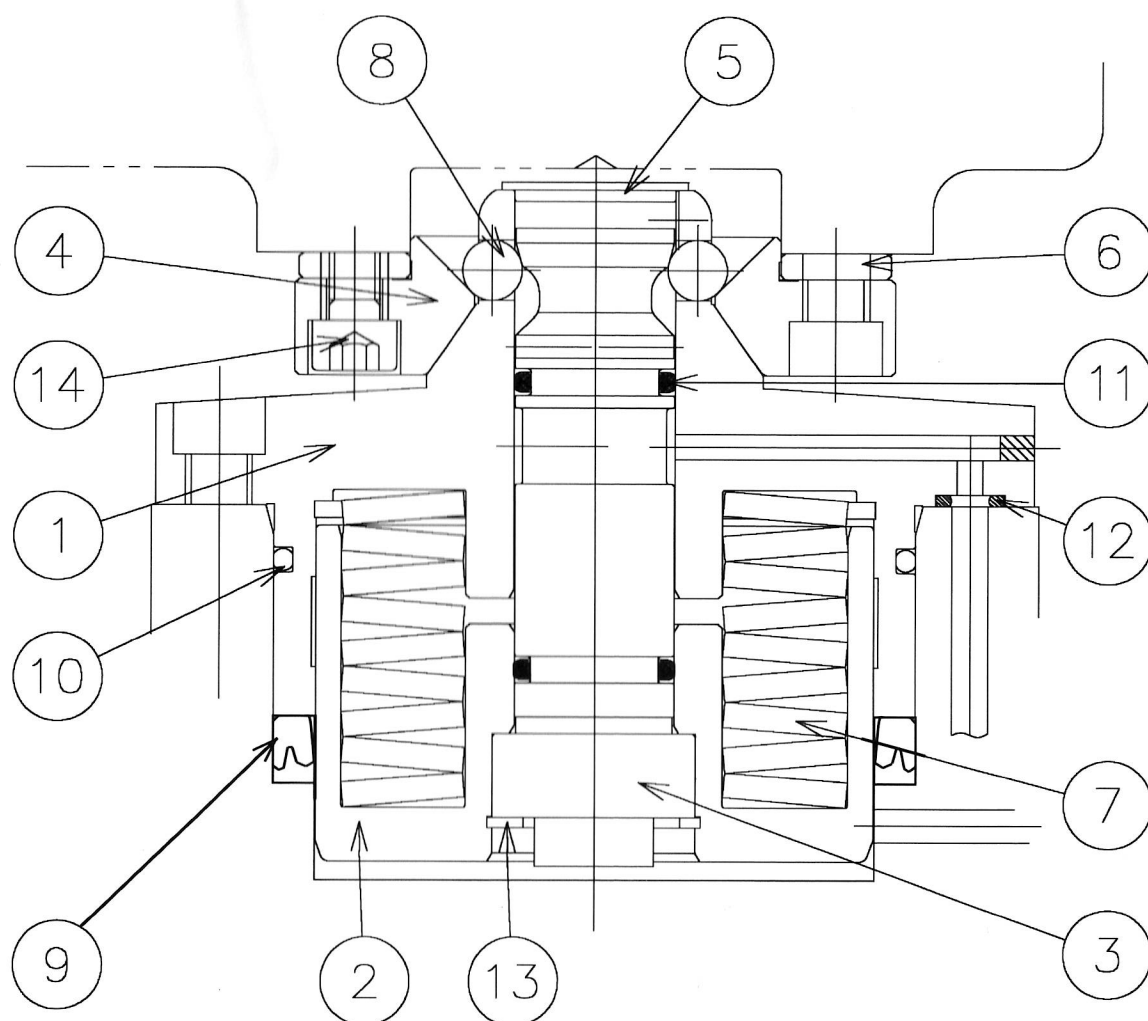
0.020mm is the allowable value. The actual average value is between 0.006mm and 0.010mm.
- 5) Check both "Parallelism between X-axis movement and Pallet surface" and "Parallelism between Z-axis movement and Pallet surface". Each of them should be under 0.020mm. (Refer to the Inspection Record; Nos. 6 & 7)

End.

Technical information

KH-41 & KH-45
No. 298R

[Assembly Drawing]



Technical information

KH-41 & KH-45
No. 298R

NO.	DESCRIPTION	Q'TY /clamping unit	CODE, TYPE	/ REMARKS
Pallet Clamping Unit				
1	Taper Clamp	1	P00015B	SUJ2
2	Piston	1	P00016B	S45C
3	Lock Bar	1	P00017D	SUJ2
5	Cap	1	P00019B	S45C
7	Belleville Spring	1	MCJ60 (9pcs/set)	TOKAI BANE
8	Steel Ball	4	9/32(φ7.144)	
9	Rod seal	1	S01-P KWM-1908-660	
10	O-Ring	1	AS568-149	Mitsubishi Cable
11	O-Ring	2	P15	NOK
12	O-Ring	1	P5	NOK
13	C-Snap Ring	1	for Dia. 24	
Mating Parts on Pallet				
4	Taper Block	1	P00018B	SUJ2
6	Spacer	1	P00020B	S45C
14	Socket Head Cap Screw	4	M6×15	